

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Patent Application

5 Applicant(s): Janniello et al.
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Group: 2153
10 Examiner: Sean M. Reilly

Title: Method and Apparatus for Client Sharing of Cached Content

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THRICE CORRECTED APPEAL BRIEF

20 Mail Stop Appeal Brief - Patents
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Appellants hereby submit this Thrice Corrected Appeal Brief to conform to the current format requirements. The original Appeal Brief was submitted on May 16, 2006 to appeal the final rejection dated November 16, 2005, of claims 1-13 and 15-28 of the above-identified patent application.

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REAL PARTY IN INTEREST

The present application is assigned to International Business Machines Corporation, as evidenced by an assignment recorded on August 22, 2001 in the United States Patent and Trademark Office at Reel 012121, Frame 0095. The assignee,
35 International Business Machines Corporation, is the real party in interest.

RELATED APPEALS AND INTERFERENCES

There are no related appeals or interferences

STATUS OF CLAIMS

Claims 1-13 and 15-28 are pending in the above-identified patent application. Claim 14 is cancelled. Claims 21-23 remain rejected under 35 U.S.C. §101 because the claimed invention is directed to non-statutory subject matter. Claims 1-13 and 15-27 remain rejected under 35 U.S.C. §103(a) as being unpatentable over Carter et al. (United States Patent Number 6,026,474) and Humphrey (United States Patent Application Publication Number 2002/0129116), and claims 1-13 and 15-28 remain rejected under 35 U.S.C. §103(a) as being unpatentable over Carter et al. and Mao et al. (United States Patent Number 6,886,178). The rejections of claims 1-13 and 15-28 are being appealed.

STATUS OF AMENDMENTS

There have been no amendments filed subsequent to the final rejection.

SUMMARY OF CLAIMED SUBJECT MATTER

Independent claim 1 is directed to a method for storing digital content in a client-side cache (FIG. 2: 275), comprising the steps of: receiving content broadcast to a client (FIG. 2: 300) via a wireless broadcast connection (FIG. 2: 210), wherein the client (FIG. 2: 300) is a machine that serves one or more users (FIG. 2: 275-1, 300) on a local area network (FIG. 2: 215; pages 9-10); storing the received content in the client-side cache (FIG. 2: 275) based on a user profile (FIG. 2: 260; pages 9-10); and making the content in the client-side cache (FIG. 2: 275) available to other clients (FIG. 2: 275-1, 300; pages 9-10).

Independent claim 9 is directed to a method for obtaining content over a network, comprising the steps of: determining if requested content is in a local cache (FIG. 2: 270; pages 10); and requesting the content from a remote client cache (FIG. 2: 275) if the requested content is not in the local cache (FIG. 2: 270; pages 10-11), wherein the content in the remote client cache (FIG. 2: 275) was broadcast to a client via a wireless broadcast connection (FIG. 2: 210; page 9-10), wherein the client is a machine (FIG. 2: 300-1) that serves one or more users (FIG. 2: 275-1, 300) on a local area network.

(FIG. 2: 215), and wherein the content was stored in the remote client cache (FIG. 2: 275) based on a user profile (FIG. 2: 260; pages 9-10).

Independent claim 15 is directed to a method for sharing digital content among a plurality of users (FIG. 2: 275-1, 300), comprising the steps of: storing content
5 broadcast to a client (FIG. 2: 300) via a wireless broadcast connection (FIG. 2: 210) in a client-side cache (FIG. 2: 275) of at least one client (FIG. 2:300), wherein the client is a machine (FIG. 2: 300) that serves one or more users (FIG. 2: 275-1, 300) on a local area network (FIG. 2: 215) and wherein the content is stored based on a user profile (FIG. 2: 260; pages 9-10); making the content in the client-side cache (FIG. 2: 275) available to a
10 plurality of additional clients (FIG. 2: 275-1, 300; pages 9-10); and maintaining a directory (FIG. 2: 500) of the content made available to a plurality of additional clients (FIG. 2: 275-1, 300; pages 9-10)

Independent claim 28 is directed to a method for storing digital content in a client-side cache (FIG. 2: 275), comprising the steps of: receiving content broadcast to a
15 client (FIG. 2: 300) via a wireless broadcast connection (FIG. 2: 210), wherein the client is a machine that serves one or more users (FIG. 2: 275-1, 300) on a local area network (FIG. 2: 215) and wherein the client is tuned to receive the wireless broadcast connection (FIG. 2: 210) via a digital television channel (pages 7 and 9-10); storing the received content in the client-side cache (FIG. 2: 275) based on a user profile (FIG. 2: 260; pages
20 9-10); and making the content in the client-side cache (FIG. 2: 275) available to other clients (FIG. 2: 275-1, 300; pages 9-10).

Claims 25 and 27 are directed to an exemplary embodiment wherein the received or stored content was predicted to be of interest to a user (pages 6 and 9-10).

Independent claim 18 is directed to a system for storing digital content in a
25 client-side cache (FIG. 2: 275), the system comprising: a memory that stores computer-readable code; and a processor operatively coupled to the memory, the processor (310) configured to implement the computer-readable code, the computer-readable code configured to: receive content broadcast to a client (FIG. 2: 300) via a wireless broadcast connection (FIG. 2: 210), wherein the client (FIG. 2: 300) is a machine that serves one or
30 more users (FIG. 2: 275-1, 300) on a local area network (FIG. 2: 215; pages 9-10); store

the received content in the client-side cache (FIG. 2: 275) based on a user profile (FIG. 2: 260; pages 9-10); and make the content in the client-side cache (FIG. 2: 275) available to other clients (FIG. 2: 275-1, 300; pages 9-10)

Independent claim 19 is directed to a system for obtaining content over a network, the system comprising: a memory that stores computer-readable code; and a processor operatively coupled to the memory, the processor configured to implement the computer-readable code, the computer-readable code configured to: determine if requested content is in a local cache (FIG. 2: 270; pages 10); and request the content from a remote client cache (FIG. 2: 275) if the requested content is not in the local cache (FIG. 2: 270; page 10-11), wherein the content in the remote client cache (FIG. 2: 275) was broadcast to a client (FIG. 2: 300) via a wireless broadcast connection (FIG. 2: 210), wherein the client is a machine that serves one or more users (FIG. 2: 275-1, 300) on a local area network (FIG. 2: 215), and wherein the content was stored in the remote client cache (FIG. 2: 275) based on a user profile (FIG. 2: 260; pages 9-10)

Independent claim 20 is directed to a system for sharing digital content among a plurality of users (FIG. 2: 275-1, 300), the system comprising: a memory that stores computer-readable code; and a processor operatively coupled to the memory, the processor configured to implement the computer-readable code, the computer-readable code configured to: store content broadcast to a client (FIG. 2: 300) via a wireless broadcast connection (FIG. 2: 210) in a client-side cache (FIG. 2: 275) of at least one client (FIG. 2: 300), wherein the client is a machine that serves one or more users (FIG. 2: 275-1, 300) on a local area network (FIG. 2: 215) and wherein the content is stored based on a user profile (FIG. 2: 260; pages 9-10); make the content in the client-side cache (FIG. 2: 275) available to a plurality of additional clients (FIG. 2: 275-1, 300; pages 9-10); and maintain a directory (FIG. 2: 500) of the content made available to a plurality of additional clients (FIG. 2: 275-1, 300; pages 9-10)

Independent claim 21 is directed to an article of manufacture for storing digital content in a client-side cache (FIG. 2: 275), comprising: a computer readable medium having computer readable code means embodied thereon, the computer readable program code means comprising: a step to receive content broadcast from a central server

(FIG. 1: 400) to a client (FIG. 2: 300) via a wireless broadcast connection (FIG. 2: 210), wherein the client is a machine that serves one or more users (FIG. 2: 275-1, 300) on a local area network (FIG. 2: 215; pages 9-10); a step to store the received content in the client-side cache (FIG. 2: 275) based on a user profile (FIG. 2: 260; pages 9-10); and a
5 step to make the content in the client-side cache (FIG. 2: 275) available to other clients (FIG. 2: 275-1, 300; pages 9-10)

Independent claim 22 is directed to an article of manufacture for obtaining content over a network, comprising: a computer readable medium having computer readable code means embodied thereon, the computer readable program code means
10 comprising: a step to determine if requested content is in a local cache (FIG. 2: 270; pages 10); and a step to request the content from a remote client cache (FIG. 2: 275) if the requested content is not in the local cache (FIG. 2: 270; pages 10-11), wherein the content in the remote client cache (FIG. 2: 275) was broadcast to a client (FIG. 2: 300) via a wireless broadcast connection (FIG. 2: 210; pages 9-10), wherein the client is a
15 machine that serves one or more users (FIG. 2: 275-1, 300) on a local area network (FIG. 2: 215), and wherein the content was stored in the remote client cache (FIG. 2: 275) based on a user profile (FIG. 2: 260; pages 9-10)

Independent claim 23 is directed to an article of manufacture for sharing digital content among a plurality of users, comprising: a computer readable medium
20 having computer readable code means embodied thereon, the computer readable program code means comprising: a step to store content broadcast to a client (FIG. 2: 300) via a wireless broadcast connection (FIG. 2: 210) in a client-side cache (FIG. 2: 275) of at least one client (FIG. 2: 300), wherein the client is a machine that serves one or more users (FIG. 2: 275-1, 300) on a local area network (FIG. 2: 215) and wherein the content is
25 stored based on a user profile (FIG. 2: 260; pages 9-10); a step to make the content in the client-side cache (FIG. 2: 275) available to a plurality of additional clients (FIG. 2: 275-1, 300; pages 9-10); and a step to maintain a directory (FIG. 2: 500) of the content made available to a plurality of additional clients (FIG. 2: 275-1, 300; pages 9-10)

STATEMENT OF GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Claims 21-23 are rejected under 35 U.S.C. §101 because the claimed invention is directed to non-statutory subject matter. Claims 1-13 and 15-27 are rejected under 35 U.S.C. §103(a) as being unpatentable over Carter et al. and Humphrey, and
5 claims 1-13 and 15-28 are rejected under 35 U.S.C. §103(a) as being unpatentable over Carter et al. and Mao et al.

ARGUMENTSection 101 Rejections

10 Claims 21-23 were rejected under 35 U.S.C. §101 because the claimed invention is directed to non-statutory subject matter. In the Response to Arguments section of the final Office Action, the Examiner asserts that a computer readable medium as defined by Applicant on page 12 of the specification may be a recordable medium or a transmission medium and, as previously indicated, a transmission medium is not a
15 tangible medium. In the Advisory Action, the Examiner referred Applicants to pages 50-57 of the recently published "Interim Guidelines for Examination of Patent Applications for Patent Subject Matter Eligibility."

Appellants note that the term "tangible" means "having substance or material existence." (See, dictionary.com.) Contrary to the Examiner's assertion, a
20 *transmission medium is a tangible entity, consisting of radio waves, light waves, electronic signals, etc.* Claims 21-23 require a *computer readable medium having computer readable code means embodied thereon*, and are therefore limited to *tangible* embodiments.

Regarding the Examiner's reference to the published guidelines,
25 Appellants note that the cited guidelines teach that,

from a technological standpoint, *a signal encoded with functional descriptive material is similar to a computer-readable memory encoded with functional descriptive material, in that they both create a functional interrelationship with a computer.* In other words, a
30 computer is able to execute the encoded functions, regardless of whether the format is a disk or a signal.

(Second to last paragraph on page 57; emphasis added)

Regarding a computer-readable memory encoded with functional descriptive material, the published guidelines teaches that,

when functional descriptive material is recorded on some computer-readable medium *it becomes structurally and functionally interrelated to the medium and will be statutory in most cases* since use of technology permits the function of the descriptive material to be realized.

(Page 50, second paragraph; emphasis added.)

As noted above, claims 21-23 require a *computer readable medium having computer readable code means embodied thereon*. Appellants note that computer readable code means is classified as functional descriptive material and that claims 21-23 are therefore directed to statutory subject matter. Thus, Appellants respectfully request that the section 101 rejections be withdrawn.

Independent Claims 1, 9, 15, 18-23 and 28

Independent claims 1, 9, 15, and 18-23 were rejected under 35 U.S.C. §103(a) as being unpatentable over Carter et al. and Humphrey and independent claims 1, 9, 15, 18-23, and 28 were rejected under 35 U.S.C. §103(a) as being unpatentable over Carter et al. and Mao et al. Regarding claim 1, the Examiner asserts that Carter discloses receiving content broadcast to a client (col. 27, lines 65-66) and storing said received content in said client-side cache (col. 28, lines 7-10). In the Response to Arguments section of the final Office Action, the Examiner asserts that Carter clearly discloses storing content based on a user profile (Carter's system utilizes a migration controller that manages the storage of content based on, among other items, user data access patterns (col. 14, lines 40-46)). The Examiner further asserts that Mao also stores content based on a user profile (Mao only stores the most recently accessed web pages (col. 8, lines 61-65, and col. 9, lines 3-7)). In the Advisory Action, the Examiner asserts that a "user profile" is merely any data set that represents characteristics of users and maintains that the data access patterns taught by Carter are analogous to Applicant's claimed user profile.

Appellants note that the present specification, as amended, teaches that, "for example, the user profile 260 might provide a list of the users most popular sites."

(Page 6, line 10, of the amended specification; emphasis added.) User profile 260 is a data entity (see, FIGS. 2 and 3). Regarding the Examiner's assertion that the data access patterns taught by Carter are analogous to Applicant's claimed user profile, Appellants note that this definition is contrary to the well known definition of a user profile. For example, Lalmas et al. in a report entitled "Personalised Enriched Broadcast Experience" teach that "*users profiles were represented as a list of likes and dislikes with associated probability values reflecting the degree of interest.*"

(See, http://www.ercim.org/publication/Ercim_News/enw62/lalmas.html.) Carter does not disclose or suggest that the data access patterns are lists, or that the access patterns indicate a degree of interest of a user. In addition, Carter does not disclose or suggest that the data access patterns indicate the access pattern(s) of a single user and, thus, cannot provide a profile of a user

Neither Carter, Humphrey, nor Mao, however, address the issue of storing content *based on a user profile*, as defined in the present disclosure. Humphrey, for example, is directed to broadcasting information, for example, "when the rate of requests for information exceeds a predetermined number over a predetermined time" (Paragraph 52). Carter is directed to a shared client-side Web cache, wherein the Web cache is shared by a particular group of users (Col. 2, lines 38-40.) In the text cited by the Examiner, Carter teaches that "the migration controller can determine and respond to data access patterns, resource demands or any other criteria or heuristic suitable for practice with the invention. Accordingly, the migration controller can balance the loads on the network, and move data to nodes from which it is commonly accessed." (Col. 14, lines 40-45.) Mao is directed to formatting Internet HTML Web page data to fit within a standard MPEG-2 data packet structure, and multiplexing it along with other MPEG-2 digital video signals for transport within a multiple channel digital video system (see, Abstract). In the text cited by the Examiner, Mao teaches that "between the two extremes of no storage at one end, and 100% local storage of the rotating carousel at the other end, there is a variety of partial storage options. One option is to use a high-speed cache to store a number of the most recently accessed Web pages." (Col. 8, lines 61-65.) Neither the data access patterns taught by Carter nor the most recently accessed Web pages taught

by Mao are user profiles, as defined in the present specification and as understood by a person of ordinary skill in the art. Independent claims 1, 9, 15, 18-23, and 28 require *storing content based on a user profile*.

Thus, Carter et al., Humphrey, and Mao et al., alone or in combination, do
5 not disclose or suggest storing content based on a user profile, as required by independent claims 1, 9, 15, 18-23, and 28

Dependent Claims 25 and 27

Dependent claims 25 and 27 were rejected under 35 U.S.C. §103(a) as
10 being unpatentable over Carter et al. and Humphrey and under 35 U.S.C. §103(a) as being unpatentable over Carter et al. and Mao et al. Regarding claims 25 and 27, the Examiner acknowledges that Carter fails to specifically recite where received content was predicted to be of interest to a user, but asserts that Humphrey discloses predicting content of interest to a user (page 2, paragraph 24), and then sending the content
15 predicted to be of interest prior to a client request (page 2, paragraph 25). The Examiner further asserts that Mao discloses that said “broadcast content to said client... was predicted to be of interest to a user.” (Col. 4, lines 6-9.)

Appellants note that, in the text cited by the Examiner, Humphrey teaches to “determine what information is of *global interest to the Internet community*.” (Page 2,
20 paragraph 24; emphasis added.) Appellants also note that, in the text cited by the Examiner, Mao teaches that “typical broadcast Web sites contain news, weather and sports, but can be any Web site of general interest to many viewers.” (Col. 4, lines 6-9.) Neither Humphrey nor Mao discloses or suggests to determine what information is *predicted to be of interest to a user*. In addition, Appellants could find no disclosure or
25 suggestion in either Carter, Humphrey, or Mao to combine the determination of what information is of interest to the Internet community, with the invention of Carter.

Thus, Carter et al., Humphrey, and Mao, alone or in combination, do not disclose or suggest wherein said received content was predicted to be of interest to a user, as required by claim 25, and do not disclose or suggest wherein said content in said
30 remote client cache was predicted to be of interest to a user, as required by claim 27.

Conclusion

The rejections of the cited claims under 35 U.S.C. §103(a) as being unpatentable over Carter et al. and Humphrey, and under 35 U.S.C. §103(a) as being unpatentable over Carter et al. and Mao et al. are therefore believed to be improper and should be withdrawn. The remaining rejected dependent claims are believed allowable for at least the reasons identified above with respect to the independent claims.

The attention of the Examiner and the Appeal Board to this matter is appreciated.

Respectfully,

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CLAIMS APPENDIX

1. A method for storing digital content in a client-side cache, said method comprising the steps of:

5 receiving content broadcast to a client via a wireless broadcast connection, wherein said client is a machine that serves one or more users on a local area network; storing said received content in said client-side cache based on a user profile; and making said content in said client-side cache available to other clients

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2. The method of claim 1, further comprising the step of determining if requested content is in said client-side cache before requesting said content from a remote source

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3. The method of claim 1, further comprising the step of requesting said content from an edge server if said requested content is not in said client-side cache.

4. The method of claim 1, further comprising the step of requesting said content from a provider of said content if said requested content is not in said client-side cache.

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5. The method of claim 1, further comprising the step of requesting said content from another client cache if said requested content is not in said client-side cache.

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6. The method of claim 5, wherein said step of requesting said content from another client cache further comprises the step of accessing a directory to determine where said content is cached.

7. The method of claim 1, further comprising the step of providing information to a central cache directory regarding content that is stored in said client-side

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cache

8. The method of claim 1, wherein said content in said client-side cache is made available to other clients using a point-to-point link

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9 A method for obtaining content over a network, said method comprising the steps of:

determining if requested content is in a local cache; and

10 requesting said content from a remote client cache if said requested content is not in said local cache, wherein said content in said remote client cache was broadcast to a client via a wireless broadcast connection, wherein said client is a machine that serves one or more users on a local area network, and wherein said content was stored in said remote client cache based on a user profile

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10 The method of claim 9, further comprising the step of requesting said content from a remote source if said requested content is not in said remote client cache.

11. The method of claim 9, further comprising the step of requesting said content from an edge server if said requested content is not in said remote client cache

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12. The method of claim 9, further comprising the step of requesting said content from a provider of said content if said requested content is not in said remote client cache

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13 The method of claim 9, wherein said step of requesting said content from a remote client cache further comprises the step of accessing a directory to determine where said content is cached.

14. (Cancelled)

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15 A method for sharing digital content among a plurality of users, said method comprising the steps of:

storing content broadcast to a client via a wireless broadcast connection in a client-side cache of at least one client, wherein said client is a machine that serves one or more users on a local area network and wherein said content is stored based on a user profile;

making said content in said client-side cache available to a plurality of additional clients; and

maintaining a directory of said content made available to a plurality of additional clients.

16. The method of claim 15, wherein a user determines if requested content is in said directory before requesting said content from another remote source.

17. The method of claim 15, wherein said content in said client-side cache is made available to other clients using a point-to-point link.

18 A system for storing digital content in a client-side cache, said system comprising:

a memory that stores computer-readable code; and

a processor operatively coupled to said memory, said processor configured to implement said computer-readable code, said computer-readable code configured to:

receive content broadcast to a client via a wireless broadcast connection, wherein said client is a machine that serves one or more users on a local area network;

store said received content in said client-side cache based on a user profile; and

make said content in said client-side cache available to other clients.

19. A system for obtaining content over a network, said system comprising:

a memory that stores computer-readable code; and
a processor operatively coupled to said memory, said processor configured to implement said computer-readable code, said computer-readable code configured to:
determine if requested content is in a local cache; and
5 request said content from a remote client cache if said requested content is not in said local cache, wherein said content in said remote client cache was broadcast to a client via a wireless broadcast connection, wherein said client is a machine that serves one or more users on a local area network, and wherein said content was stored in said remote client cache based on a user profile.

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20 A system for sharing digital content among a plurality of users, said system comprising:

a memory that stores computer-readable code; and
a processor operatively coupled to said memory, said processor configured to implement said computer-readable code, said computer-readable code configured to:
15 store content broadcast to a client via a wireless broadcast connection in a client-side cache of at least one client, wherein said client is a machine that serves one or more users on a local area network and wherein said content is stored based on a user profile;

20 make said content in said client-side cache available to a plurality of additional clients; and

maintain a directory of said content made available to a plurality of additional clients.

25 21. An article of manufacture for storing digital content in a client-side cache, comprising:

a computer readable medium having computer readable code means embodied thereon, said computer readable program code means comprising:

30 a step to receive content broadcast from a central server to a client via a wireless broadcast connection, wherein said client is a machine that serves one or more

users on a local area network;

a step to store said received content in said client-side cache based on a user profile; and

5 a step to make said content in said client-side cache available to other clients.

22. An article of manufacture for obtaining content over a network, comprising:

10 a computer readable medium having computer readable code means embodied thereon, said computer readable program code means comprising:

a step to determine if requested content is in a local cache; and

15 a step to request said content from a remote client cache if said requested content is not in said local cache, wherein said content in said remote client cache was broadcast to a client via a wireless broadcast connection, wherein said client is a machine that serves one or more users on a local area network, and wherein said content was stored in said remote client cache based on a user profile.

23. An article of manufacture for sharing digital content among a plurality of users, comprising:

20 a computer readable medium having computer readable code means embodied thereon, said computer readable program code means comprising:

25 a step to store content broadcast to a client via a wireless broadcast connection in a client-side cache of at least one client, wherein said client is a machine that serves one or more users on a local area network and wherein said content is stored based on a user profile;

a step to make said content in said client-side cache available to a plurality of additional clients; and

a step to maintain a directory of said content made available to a plurality of additional clients.

24. The method of claim 1, wherein said content broadcast to said client is broadcast prior to being requested by a user

25. The method of claim 1, wherein said received content was predicted to
5 be of interest to a user.

26. The method of claim 9, wherein said content in said remote client cache was broadcast prior to being requested by a user.

10 27. The method of claim 9, wherein said content in said remote client cache was predicted to be of interest to a user

28. A method for storing digital content in a client-side cache, said method comprising the steps of:

15 receiving content broadcast to a client via a wireless broadcast connection, wherein said client is a machine that serves one or more users on a local area network and wherein said client is tuned to receive said wireless broadcast connection via a digital television channel;

20 storing said received content in said client-side cache based on a user profile; and

making said content in said client-side cache available to other clients

EVIDENCE APPENDIX

There is no evidence submitted pursuant to § 1.130, 1.131, or 1.132 or entered by the Examiner and relied upon by appellant.

RELATED PROCEEDINGS APPENDIX

There are no known decisions rendered by a court or the Board in any proceeding identified pursuant to paragraph (c)(1)(ii) of 37 CFR 41.37